

Scope

This report presents the results of the subsoil investigation for the proposed solid waste disposal site at 134th Street and the Calumet Expressway, Chicago, Illinois.

The purpose of the investigation is to secure and log subsoil information, to record the geological nature, type, consistency and thicknesses of the various soil strata as encountered in the borings, to perform laboratory tests and to evaluate all of the data obtained in order to

Geology of Site and Soil Conditions

The site is located on soils of lake-bottom origin which were deposited over soils of glacial origin. The site has been filled with refuse and other debris apparently after removal of some of the natural soils.

The lake-bottom soils are sands and generally appear in the test borings as a few feet thick under recent fill. The clay tills below the sands commence at depths of about 12 to 25 feet from present grade. Most borings were discontinued in the clay tills after about 5 feet of penetration. One test boring extended to a depth of near 80 feet and 4 layers of till were encountered. The upper till layer, a plastic clay of tough consistency extends to about 35 feet. The second till layer, somewhat firmer, extends to about 55 feet, and is a clay of very tough consistency. Commencing about 55 feet are the hard clay tills and about 65 feet the "hard pan" silty tills. The test boring was discontinued at 78.7 feet below grade.

The fills range from about 7.5 to 15 feet deep and are quite variable, consisting of household refuse, wood, concrete, cinders, brick and other miscellaneous fills. Ground water was generally encountered in the upper fills at depths of about 5 to 11 feet.

Reference is made to the enclosed soil profile which was made from the test boring data.



Conclusions

It is understood that the intent is to develop the site for solid waste disposal by removing existing fill, excavating to depths of near 40 feet and placing additional fill in the excavation.

The underlying clay tills are considered highly impermeable soils and are expected to provide a barrier to prevent possible leachate from solid waste from entering into the bedrock ground-water supply. It is noted that an excavation of the size proposed is not likely to encounter only homogeneous tills, and isolated areas of permeable sand or silt may be exposed. Should silt or sand seams be encountered, they must be sealed with a minimum of 5 feet of impermeable clay.

Above the clays the sand soils will require a seal to prevent infiltration of leachate laterally into the sand aquifer. A clay wall, keyed into the glacial till, should be constructed by placing the clay in layers and compacting to an elevation well above the ground-water level. It is noted that good control of compaction of the impervious wall liner is required to insure that the wall will retain possible leachates within the fill and prevent contamination of the upper ground water.

All impervious fill should be selected clay of minimum coefficient of permeability of 5×10^{-6} cm./sec., placed in layers not to exceed 6 inches in compacted thickness. A minimum density of compaction of 95% of ASTM D1557 is recommended.

Existing Fill

The existing fill is variable consisting mainly of refuse type fill or paper and rubbish. Some concrete, wood, and other rubble, however, was also noted in the test borings. The following is a tabulation of the existing fill depths.

<u>Bore No.</u>	<u>Depth of Fill</u>
1	20'
2	15'
3	16.5'
4	7.5'
5	15'
6	11'